NOTES.

We regret to announce the death of Mr. Robert Damon, of Weymouth, the well-known naturalist and geologist. He died suddenly on Saturday, the 4th instant, from heart disease. Mr. Damon was the author of an excellent work on the "Geology of Weymouth and the Isle of Portland," now in its second edition. He was a most extensive traveller and an assiduous collector. He obtained a marvellous series of fossil fishes from the Cretaceous beds of the Lebanon, Syria, now in the British Natural History Museum, also the most complete skeleton of that rare and extinct Sirenian, "Steller's Sea-cow," from Behring Island. Although in his seventy-fifth year, he contemplated another trip to Siberia to procure an entire Mammoth's skeleton for the National Museum. Only a few years ago he took passage from Nijni Novgorod, down the Volga to Astrakhan, for the purpose of collecting a complete series of the fishes of the Caspian Sea, in which he was most successful. He lately purchased the celebrated zoological collections forming the "Godeffroy Museum" in Hamburg, and he had perhaps the largest collection of recent shells in this country. Mr. Damon's loss will be long felt by a wide circle of scientific friends in all parts of the world, by whom he was warmly esteemed and respected.

The Paris Exhibition was opened on Monday by the President of the French Republic. As usual on such occasions, there was a great display of empty spaces which ought to have been, and soon will be, filled with exhibits. The British Section was greatly in advance of the others. M. Carnot, in speaking of the general character of the Exhibition, referred emphatically to "the surprises reserved for our generation by the marvellous progress of science."

At the Royal Academy banquet, on Saturday last, Sir Henry Roscoe responded to the toast for "Science." He spoke of the intimate relations between science and art, and, as an illustration of the services rendered by the former to the latter, referred to the fact that this year we celebrate the jubilee of the discovery of photography. "In 1839," he said, "the power of the sun to draw in black and white was first indicated by Daguerre and Fox Talbot. In her infancy exhibiting but slight promise of artistic life, Photography, in her maturity, has developed true artistic power, so that she has now grown to be a trusted and valued helpmate to the artist, while she can produce effects and catch expressions which might defy the brush of a Turner or a Reynolds."

An International Congress of Photography will be held in Paris from August 6 to 17. If we may judge from the programme, which has been issued by the Organizing Committee, the proceedings are likely to be of great interest. Anyone may suggest subjects of discussion on condition that the suggestions are sent to the secretary (M. S. Pector, 9 rue Lincoln, Paris) at least fifteen days before the opening of the Congress. On August 20 there will be a public conference on the labours of the Congress.

The third of the series of One-Man Photographic Exhibitions at the Camera Club is now open to visitors on presentation of card. The Exhibition will continue for about two months. The object of this series of exhibitions is to bring together, in turn, representative collections of the work of the best photographic artists. The photographs shown on the present occasion are by Mr. J. Gale. They are chiefly photographs of landscape, and landscape with figure, and are printed in platinum and in silver processes.

Science gives the following as a complete list of the papers presented and read to the American National Academy of Science, at its meeting in April: on composite coronagraphy, by D. P. Todd; additional experimental proof that the relative coefficient of expansion between Baily's metal and steel is constant between the limits zero and 95° F. (read by title), by W. A. Rogers; notice on the method and results of a systematic study of the action of definitely related chemical compounds upon animals, by Wolcott Gibbs and Hobart Hare; on sensations of colour, and determinations of gravity, by C. S. Peirce; on the Pliocene Vertebrate fauna of Western North America, and on the North American *Proboscidea*, by E. D. Cope; on the mass of Saturn, by A. Hall, Jun.; on the nature and composition of double halides (read by title); on the rate of reduction of nitro-compounds, and on some connection between taste and chemical composition, by Ira Remsen; recent researches in atmospheric electricity, by T. C. Mendenhall; measurement by light-waves, by A. A. Michelson; on the feasibility of the establishment of a light-wave as the ultimate standard of length, by A. A. Michelson and E. W. Morley; on the general laws pertaining to stellar variation, by S. C. Chandler; review of the trivial names in Piazzi's Star Catalogue, by C. H. F. Peters; on Cretaceous flora of North America, by J. S. Newberry; terrestrial magnetism (read by title), Cleveland Abbe; spectrum photography in the ultra-violet, by Romyn Hitchcock; North American *Pelagidæ* (read by title), and development of Crustacea (read by title), by W. K. Brooks; the plane of demarcation between the Cambrian and pre-Cambrian rocks, by C. D. Walcott; report of the American Eclipse Expedition to Japan, 1887, by D. P. Todd.

It is reported from India that Mr. Blanford, Meteorological Reporter to the Government of India, who retires at the end of his furlough, has been recommended for the special pension of 6000 rupees per annum.

The following "resolution" of the Government of Bombay, which has just been published, tells its own story, and adds another to the already numerous examples of the well-judged munificence of the Parsee community of Bombay. The resolution is entitled "Scientific Medical Research." "(1) The sum of Rs. 75,000 having been placed at the disposal of his Excellency the Governor by Mr. Framjee Dinshaw Petit, for the purpose of erecting and fitting a laboratory for scientific medical research, on a site which has been approved by the donor, in the immediate vicinity of the Grant Medical College, the Governor in Council has much pleasure in accepting the offer, and, in doing so, desires publicly to thank Mr. Framjee Dinshaw Petit for his munificence in supplying an institution, the want of which has long been felt by those most interested in promoting the cause of higher medical education in this Presidency. (2) The Governor in Council is pleased to direct that the institution shall be called 'The Framjee Dinshaw Petit Laboratory for Scientific Research.' (3) Instructions for the preparation of the necessary plans and estimates for the proposed building have already been given."

The native population of Benares cannot be said to have very advanced ideas as to the importance of sanitary science. The other day a monster meeting was held in that city to protest against certain proposed drainage and water supply schemes, and a petition to the Government condemning the entire action of the municipality in the matter is said to bear 100,000 signatures. According to the Calcutta Correspondent of the *Times*, the petitioners emphatically decline to pay by increased taxation for any new system.

Last winter the Vienna Medical School was attended by 150 British and American medical graduates, among whom were many Edinburgh men. As many medical students, on their arrival at Vienna, do not know German, the Vienna *Weekly News* has opened a special "medical inquiry office" near the hospital, where information as to lectures, lodgings, &c., is given without charge to British and American medical men.

The same journal publishes weekly a list of forthcoming courses of lectures at the Universities of Vienna and Berlin.

THE *Times of Colombo* announces the arrival in Ceylon of two naturalists, Herr Frühstorfer and Herr Kannegieter, the former a German, the latter a native of Amsterdam. Herr Frühstorfer has already travelled over a great part of the world making natural history collections, while his companion is travelling on behalf of the collection of Herr Van de Poll. Both were about to proceed to the southern part of Ceylon, and after a few weeks' exploration they intended going, one to Malacca and Borneo, the other to Sumatra and Java, for scientific purposes.

A SEVERE earthquake lasting four seconds occurred at Agram on April 27 at 8.35 p.m.

A NEW stalactite cave has been found at Hönnethal, in Sauerland, not far from the village of Sanssouci. It is not very large, but has many beautiful stalactites.

COMPLAINTS having, on several occasions, been made to the Fishery Board for Scotland that salmon smolts are exposed for sale and sold, the Board have issued a notice to the effect that such sale, or exposing for sale, is illegal, and renders the seller or exposer liable to severe pecuniary penalties. The word "salmon" in the Salmon Fishery Acts of 1862 and 1868 means and includes "salmon, grilse, sea trout, bull trout, smolts, parr, and other migratory fish of the salmon kind." All offences under the Salmon Fishery Acts of 1862 and 1868 may be prosecuted, and all penalties incurred may be recovered, "before any sheriff or any two or more justices acting together, and having jurisdiction in the place where the offence was committed, at the instance of the clerk of any District Board, or of any other person."

WITH regard to Prof. Harker's article on a new farm pest, printed in NATURE last week, Miss Ormerod writes that, "if, by any accident, readers should think that what her valued friend Prof. Harker meant only as a courteous acknowledgment of specimens was an expression of belief in the injurious powers of this worm, she would in such case like to be able to mention that up to the present time she sees no reason for alarm."

A SERIES of experiments upon combustions in nitric acid vapour have been made by Dr. P. T. Austen, of Rutger's College, U.S. The gaseous nitric acid is most conveniently obtained in the following manner. Into a large flask, whose neck is sufficiently wide to admit a good-sized deflagrating spoon, a quantity of sulphuric acid is poured, so as to form a layer about half an inch deep. About ten to twenty grammes of potassium nitrate, in crystals averaging a quarter of an inch in size, are then added. On careful heating, the air is rapidly expelled, and the flask becomes filled with the clear vapour of nitric acid. A glowing chip of wood held in this vapour inflames and burns energetically, something after the manner of combustion in oxygen; but, as the red tetroxide of nitrogen, N_2O_4, is formed by the reduction of the nitric acid, a ruddy halo is seen to play around the flame. Charcoal, especially bark-charcoal, burns brilliantly, the scintillations in the red tetroxide gas producing an unusually fine effect. In a similar manner a steel watch-spring may be burnt as in oxygen, the combustion being started with a little sulphur; the effect, however, is quite different from that in oxygen, owing to the formation of a red halo around each melted globule of iron as it falls. A layer of sand should be placed in the bottom of the flask in this experiment, in order to prevent fracture. Phosphorus burns with great beauty, the dazzling white flame passing into a deep red at the edges. By far the most beautiful effects, however, are obtained by the combustion of readily oxidizable gases from jets suspended in the nitric acid vapour. Hydrogen burns with an intensely white flame, totally unlike that in oxygen, surrounded by a deep red envelope. Coal gas continues to burn with a white centre, enveloped as in case of hydrogen by a red halo; when first introduced the flame becomes musical, then degenerates into a series of rapid slight explosions; at length, after a certain amount of nitrogen tetroxide has formed, it burns quietly. Sulphuretted hydrogen gas burns with a bright yellow flame, and the flask becomes filled with a cloud of minute chamber-crystals, resulting from the action of the sulphur dioxide and water formed upon the tetroxide of nitrogen simultaneously produced. Ammonia gas burning in nitric acid vapour is perhaps the most beautiful case of simple combustion yet investigated. Success in this experiment appears to depend entirely upon the size of the orifice of the jet, which should not be less than an eighth of an inch in diameter. As soon as the jet, which of course should be turned upwards, from which a good stream of ammonia is issuing, is lowered to a level with the mouth of the flask, it may be readily ignited. On lowering it into the centre of the flask, the flame is seen to consist of a bright yellow nucleus surrounded by a greenish-yellow envelope; this, in turn, passes into an outer envelope of a carmine-red colour, which deepens as the amount of nitrogen tetroxide increases.

ACCORDING to the *Manchester Guardian*, a technical school has lately been added to the ancient Chetham College, "the most unique piece of antiquity" left in Manchester. It seems that a well-known employer of labour in Salford, and a strong supporter of technical education in Manchester and the neighbourhood, generously offered to fit up a workshop and supply it with all necessary tools for the use of Chetham College. The offer, which was regarded both as a very generous and a very happy one, was accepted by the authorities. The result was the erection of a building at the north-east rear of the College dormitories. The building, which is very well lighted and comfortably heated, has been fitted up with lathes (for wood and iron) driven by a steam-engine; also benches, drilling machines, grindstones, blacksmith's forge, vices, &c. The results so far are regarded as highly satisfactory. Some forty-five of the boys are now regularly engaged in the shop; fifteen working in the morning, fifteen in the afternoon, another batch of fifteen the next morning, and so on. Each boy works nine hours in the shop every week.

MR. ROWLAND WARD writes to the *Times* that on Saturday, April 27, one of the keepers on the estate of Mr. Farnal Watson, in Surrey, trapped a fine specimen of the kite (*Falco milvus*)—"a grand bird," says Mr. Ward, "at one time common on our moors before men became so many in the land, and their hospitality, even to such visitors, so scant." Mr. Ward notes that these birds are still sometimes encountered in Wales.

MR. ALLAN HUME proposes to issue a second edition of his "Nests and Eggs of Indian Birds." It will be edited by Mr. E. W. Oates, author of a "Hand-book to the Birds of British Burmah," and will incorporate all the notes which Mr. Hume's numerous correspondents in all parts of India have sent to him since 1873, as well as some notes from other sources. The work will be published in three volumes, 8vo, of 500 pages each; but for the convenience of subscribers it will be issued in six parts, one of which will be completed every three months, beginning from an early date. The publisher will be Mr. R. H. Porter, 18 Princes Street, Cavendish Square, London, W.

A COLLECTION of Prof. Weismann's essays on heredity has been translated under the care of Mr. E. B. Poulton, of Oxford, and will form the second volume of the series of translations of foreign biological memoirs which the Clarendon Press are publishing. The volume is nearly ready, and may be expected shortly.

MESSRS. CROSBY LOCKWOOD AND SON have published a second edition of M. Eissler's "Metallurgy of Gold." The work has been enlarged by about 150 pages and 40 additional illustrations.

WE have received the seventh part of Cassell's "New Popular Educator," which will be completed in forty-eight parts. This part contains a lithograph presenting the constellations visible in Britain.

MESSRS. C. GRIFFIN AND CO. have published the sixth annual issue of the "Year-book of the Scientific and Learned Societies of Great Britain and Ireland." The work, which is compiled from official sources, comprises lists of the papers read during 1888 before Societies engaged in fourteen departments of research.

THE additions to the Zoological Society's Gardens during the past week include an Indian Wolf (*Canis pallipes* ♀) from India, presented by Major C. S. Skipton, R.A.; two Stone Curlews (*Œdicnemus scolopax*), British, presented by Mr. Brunsden; a Golden Eagle (*Aquila chrysaëtus*) from Inverness-shire, presented by Mr. Thomas G. Henderson; a Cape Mole-rat (*Georychus capensis*), a Geometric Tortoise (*Testudo geometrica*), four Tuberculated Tortoises (*Homopus femoralis*), six Narrow-headed Toads (*Bufo angusticeps*), thirty-four Gray's Frogs (*Rana grayi*), a Spotted Slowworm (*Acontias meleagris*), from Cape Colony, South Africa, presented by the Rev. G. H. R. Fisk, C.M.Z.S.; a Puff Adder (*Vipera arietans*) from the Cape of Good Hope, presented by Mr. F. Streatfield; six European Tree Frogs (*Hyla arborea*), European, presented Mr. H. Bendelack Hewetson, F.Z.S.; a Rhesus Monkey (*Macacus rhesus* ♀) rom India, deposited; two White-eyed Ducks (*Nyroca ferruginea*), European, two Black-necked Swans (*Cygnus nigricollis*) from Antarctic America, two Lineated Kaleege (*Euplocamus lineatus*) from Tenasserim, a Brazilian Tortoise (*Testudo tabulata*) from South America, a Blackish Sternothere (*Sternothærus subniger*) from Madagascar, purchased; a Persian Gazelle (*Gazella subgutterosa*), two Chinchillas (*Chinchilla lanigera*), four Long-fronted Gerbilles (*Gerbillus longifrons*), born in the Gardens.

ASTRONOMICAL PHENOMENA FOR THE WEEK 1889 *MAY* 12–18.

(FOR the reckoning of time the civil day, commencing at Greenwich mean midnight, counting the hours on to 24, is here employed.)

At Greenwich on May 12

Sun rises, 4h. 15m.; souths, 11h. 56m. 10·1s.; daily decrease of southing, 1·2s.; sets, 19h. 38m.: right asc. on meridian, 3h. 17·9m.; decl. 18° 15′ N. Sidereal Time at Sunset, 11h. 1m.

Moon (Full on May 15, 7h.) rises, 15h. 55m.; souths, 21h. 57m.; sets, 3h. 45m.*: right asc. on meridian, 13h. 20·1m.; decl. 2° 58′ S.

Planet.	Rises. h. m.		Souths. h. m.		Sets. h. m.		Right asc. and declination on meridian. h. m.		° ′
Mercury..	4 48	...	13 10	...	21 32	...	4 32·4	...	24 8 N.
Venus.....	3 21	...	10 45	...	18 9	...	2 6·3	...	15 16 N.
Mars......	4 38	...	12 37	...	20 36	...	3 58·6	...	20 55 N.
Jupiter....	23 18*	...	3 14	...	7 10	...	18 34·0	...	22 58 S.
Saturn....	10 7	...	17 45	...	1 23*	...	9 7·8	...	17 42 N.
Uranus...	16 17	...	21 46	...	3 15*	...	13 9·8	...	6 42 S.
Neptune..	4 50	...	12 37	...	20 24	...	3 59·4	...	18 56 N.

* Indicates that the rising is that of the preceding evening and the setting that of the following morning.

May.		h.		
18	...	3	...	Jupiter in conjunction with and 0° 15′ south of the Moon.

Variable Stars.

Star.	R.A. h. m.	Decl. ° ′			h. m.	
U Cephei	0 52·5 ...	81 17 N. ...	May	16,	1 11	*m*
R Aurigæ	5 8·3 ...	53 28 N. ...	,,	13,		*M*
W Leonis	10 47·8 ...	14 18 N. ...	,,	13,		*M*
T Ursæ Majoris ...	12 31·3 ...	60 6 N. ...	,,	15,		*m*
δ Libræ	14 55·1 ...	8 5 S. ...	,,	13,	23 25	*m*
U Ophiuchi... ...	17 10·9 ...	1 20 N. ...	,,	17,	0 10	*m*
R Scuti	18 41·6 ...	5 50 S. ...	,,	13,		*M*
β Lyræ...	18 46·0 ...	13 14 N. ...	,,	14,	22 30	*M*
U Aquilæ	19 23·4 ...	7 16 S. ...	,,	18,	1 0	*M*
R Capricorni ...	20 5·1 ...	14 36 S. ...	,,	17,		*M*
X Cygni	20 39·1 ...	35 11 N. ...	,,	17,	2 0	*m*
T Vulpeculæ ...	20 46·8 ...	27 50 N. ...	,,	13,	1 0	*M*
δ Cephei	22 25·1 ...	57 51 N. ...	,,	15,	21 0	*M*

M signifies maximum; *m* minimum.

Meteor-Showers.

	R.A.	Decl.	
Near α Coronæ	232° ...	27° N. ...	Faint. Rather slow.
,, η Aquilæ	295 ...	0 ...	May 15. Very slow.
From Delphinus	313 ...	15 N. ...	Swift. Streaks.

GEOGRAPHICAL NOTES.

DR. H. MEYER, in a paper read before the Geographical Society of Leipzig, deals with the snowfall on the summit of Kilimanjaro. Having shown that the southern and south-eastern slopes of the mountain are exposed during summer to the south-eastern trade winds, while the summit rises into the region of the anti-trades, and that local winds, sometimes of considerable force, ascend the mountain slope during the day, and descend during the night, he explains how these winds produce rain and snow. Dr. Meyer looks upon the wall of ice which stopped his further progress as the edge of a cap of *névé* which covers the summit, and which, owing to the combined influence of the wind and radiation, has melted away on its northern side. On the south, however, it seems to form a true glacier, which issues from the ancient crater-trough of Kibo.

SOME of the conclusions come to by Dr. K. W. Schmidt, in his paper on the soil and climate of German East Africa, in the current number of *Petermann's Mitteilungen*, are worth giving in detail. The wooded and mountainous region of Usambara and the western part of Bondei, in consequence of the favourable character of the soil, the copious rainfall, and extensive irrigation, may be truly described as fertile, and in the opinion of the author these countries have a great future before them. West of Usambara extend vast steppes, utterly unfit for cultivation. The mountain mass of Kilimanjaro, composed of recent volcanic, basaltic, and trachytic rocks, and clothed with a wealth of forests, should become of great importance. The physical condition of the country between the Pangani and the Wami are apparently not very favourable. Westwards the country of Nguru, in its geological formation, its magnificent forests, its numerous streams, and its meteorological conditions, resembles Usambara. Southern Useguha, as far as the Kingani and Gerengere, including the districts of Udoe and Ukewere, is nothing but a vast waterless steppe. Ukami, in its western part, abounds in lofty forest-clad mountains and rushing streams, and its soil is well adapted for cultivation; the soil of the eastern part of Ukami is, on the other hand, composed almost exclusively of quartz pebbles and gravel. Immediately to the west of Ukami stretches the vast desolate Mkata steppe, beyond which rises the mountainous country of Usagara, divided by the Mukondokwa River. The plain of Farhani, traversed by the river, is fertile and well populated. The mountainous district of Usagara itself suffers from a lack of streams, and also from the sparsely wooded character of its mountain slopes, at least in the eastern part. The country of Khutu, in its various river valleys, might furnish soil suitable for extensive cultivation. The general results of Dr. Schmidt's observations is to show that there is a great difference in the fertility and consequent value of the various countries comprised within the German protectorate in East Equatorial Africa, and that while there is a considerable extent of extremely fertile territory, the greater part does not appear to be capable of remunerative cultivation.